What Is Claimed Is:

1. A method for performing a minimum computation for an interval operation, comprising:

receiving at least four floating-point numbers, including a first floating-point number, a second floating-point number, a third floating-point number and a fourth floating-point number; and

computing a minimum of the at least four floating-point numbers;

wherein if the at least four floating-point numbers include one or two default NaN (not-a-number) values and the remaining values are not default NaN values, the default NaN values are ignored in computing the minimum.

2. The method of claim 1,

wherein the minimum is a left endpoint of a resulting interval of the interval operation;

wherein the first floating-point number is the result of an operation between the left endpoint of a first interval and the left endpoint of a second interval;

wherein the second floating-point number is the result of the operation between the left endpoint of the first interval and the right endpoint of the second interval;

wherein the third floating-point number is the result of the operation between the right endpoint of the first interval and the left endpoint of the second interval; and

wherein the fourth floating-point number is the result of the operation between the right endpoint of the first interval and the right endpoint of the second interval.

3. The method of claim 1, wherein computing the minimum involves setting the minimum to a value representing the empty interval, if any of the at least four floating-point numbers contain the value representing the empty interval.

4. The method of claim 3, wherein the value representing the empty interval is a non-default NaN value.

5. The method of claim 2, wherein computing the minimum involves setting the minimum to negative infinity if the first floating-point number is a default NaN value and the fourth floating-point number is the default NaN value.

6. The method of claim 2, wherein computing the minimum involves setting the minimum to negative infinity if the second floating-point number is a default NaN value and the third floating-point number is the default NaN value.

7. The method of claim 1, wherein if none of the at least four floating-point numbers is a default NaN value or a value representing the empty interval, computing the minimum involves selecting the minimum of the at least four floating-point numbers.

8. The method of claim 2, wherein the operation can include one of a multiplication operation and a division operation.

9. A method for performing a maximum computation for an interval operation, comprising:

receiving at least four floating-point numbers, including a first floating-point number, a second floating-point number, a third floating-point number and a fourth floating-point number; and

computing a maximum of the at least four floating-point numbers;

wherein if the at least four floating-point numbers include one or two default NaN (not-a-number) values and the remaining values are not default NaN values, the default NaN values are ignored in computing the maximum.

10. The method of claim 9,

wherein the maximum is a right endpoint of a resulting interval of the interval operation;

wherein the first floating-point number is the result of an operation between the left endpoint of a first interval and the left endpoint of a second interval;

wherein the second floating-point number is the result of the operation between the left endpoint of the first interval and the right endpoint of the second interval;

wherein the third floating-point number is the result of the operation between the right endpoint of the first interval and the left endpoint of the second interval; and

wherein the fourth floating-point number is the result of the operation between the right endpoint of the first interval and the right endpoint of the second interval.

11. The method of claim 9, wherein computing the maximum involves setting the maximum to a value representing the empty interval, if any of the at

least four floating-point numbers contain the value representing the empty interval.

12. The method of claim 11, wherein the value representing the empty interval is a non-default NaN value.

13. The method of claim 10, wherein computing the maximum involves setting the maximum to positive infinity if the first floating-point number is a default NaN value and the fourth floating-point number is the default NaN value.

14. The method of claim 10, wherein computing the maximum involves setting the maximum to positive infinity if the second floating-point number is a default NaN value and the third floating-point number is the default NaN value.

15. The method of claim 9, wherein if none of the at least four floating-point numbers is a default NaN value or a value representing the empty interval, computing the maximum involves selecting the maximum of the at least four floating-point numbers.

16. The method of claim 10, wherein the operation can include one of a multiplication operation and a division operation.

17. A computer-readable storage medium storing instructions that when executed by a computer cause the computer to perform a method for

performing a minimum computation for an interval operation, the method comprising:

receiving at least four floating-point numbers, including a first floating-point number, a second floating-point number, a third floating-point number and a fourth floating-point number; and

computing a minimum of the at least four floating-point numbers;

wherein if the at least four floating-point numbers include one or two default NaN (not-a-number) values and the remaining values are not default NaN values, the default NaN values are ignored in computing the minimum.

18. The computer-readable storage medium of claim 17,

wherein the minimum is a left endpoint of a resulting interval of the interval operation;

wherein the first floating-point number is the result of an operation between the left endpoint of a first interval and the left endpoint of a second interval;

wherein the second floating-point number is the result of the operation between the left endpoint of the first interval and the right endpoint of the second interval;

wherein the third floating-point number is the result of the operation between the right endpoint of the first interval and the left endpoint of the second interval; and

wherein the fourth floating-point number is the result of the operation between the right endpoint of the first interval and the right endpoint of the second interval.

19. The computer-readable storage medium of claim 17, wherein computing the minimum involves setting the minimum to a value representing the empty interval, if any of the at least four floating-point numbers contain the value representing the empty interval.

20. The computer-readable storage medium of claim 19, wherein the value representing the empty interval is a non-default NaN value.

21. The computer-readable storage medium of claim 18, wherein computing the minimum involves setting the minimum to negative infinity if the first floating-point number is a default NaN value and the fourth floating-point number is the default NaN value.

22. The computer-readable storage medium of claim 18, wherein computing the minimum involves setting the minimum to negative infinity if the second floating-point number is a default NaN value and the third floating-point number is the default NaN value.

23. The computer-readable storage medium of claim 17, wherein if none of the at least four floating-point numbers is a default NaN value or a value representing the empty interval, computing the minimum involves selecting the minimum of the at least four floating-point numbers.

24. The computer-readable storage medium of claim 18, wherein the operation can include one of a multiplication operation and a division operation.

25. A computer-readable storage medium storing instructions that when executed by a computer cause the computer to perform a method for performing a maximum computation for an interval operation, the method comprising:

receiving at least four floating-point numbers, including a first floating-point number, a second floating-point number, a third floating-point number and a fourth floating-point number; and

computing a maximum of the at least four floating-point numbers;

wherein if the at least four floating-point numbers include one or two default NaN (not-a-number) values and the remaining values are not default NaN values, the default NaN values are ignored in computing the maximum.

26. The computer-readable storage medium of claim 25,

wherein the maximum is a right endpoint of a resulting interval of the interval operation;

wherein the first floating-point number is the result of an operation between the left endpoint of a first interval and the left endpoint of a second interval;

wherein the second floating-point number is the result of the operation between the left endpoint of the first interval and the right endpoint of the second interval;

wherein the third floating-point number is the result of the operation between the right endpoint of the first interval and the left endpoint of the second interval; and

wherein the fourth floating-point number is the result of the operation between the right endpoint of the first interval and the right endpoint of the second interval.

27. The computer-readable storage medium of claim 25, wherein computing the maximum involves setting the maximum to a value representing the empty interval, if any of the at least four floating-point numbers contain the value representing the empty interval.

28. The computer-readable storage medium of claim 27, wherein the value representing the empty interval is a non-default NaN value.

29. The computer-readable storage medium of claim 26, wherein computing the maximum involves setting the maximum to positive infinity if the first floating-point number is a default NaN value and the fourth floating-point number is the default NaN value.

30. The computer-readable storage medium of claim 26, wherein computing the maximum involves setting the maximum to positive infinity if the second floating-point number is a default NaN value and the third floating-point number is the default NaN value.

31. The computer-readable storage medium of claim 25, wherein if none of the at least four floating-point numbers is a default NaN value or a value representing the empty interval, computing the maximum involves selecting the maximum of the at least four floating-point numbers.

32. The computer-readable storage medium of claim 26, wherein the operation can include one of a multiplication operation and a division operation.

33. An apparatus that performs a minimum computation for an interval operation, comprising:

an input that is configured to receive at least four floating-point numbers, including a first floating-point number, a second floating-point number, a third floating-point number and a fourth floating-point number; and

a computing mechanism that is configured to compute a minimum of the at least four floating-point numbers;

wherein if the at least four floating-point numbers include one or two default NaN (not-a-number) values and the remaining values are not default NaN values, the default NaN values are ignored in computing the minimum.

34. The apparatus of claim 33,

wherein the minimum is a left endpoint of a resulting interval of the interval operation;

wherein the first floating-point number is the result of an operation between the left endpoint of a first interval and the left endpoint of a second interval;

wherein the second floating-point number is the result of the operation between the left endpoint of the first interval and the right endpoint of the second interval;

wherein the third floating-point number is the result of the operation between the right endpoint of the first interval and the left endpoint of the second interval; and

wherein the fourth floating-point number is the result of the operation between the right endpoint of the first interval and the right endpoint of the second interval.

35. The apparatus of claim 33, wherein the computing mechanism is configured to set the minimum to a value representing the empty interval, if any of the at least four floating-point numbers contain the value representing the empty interval.

36. The apparatus of claim 25, wherein the value representing the empty interval is a non-default NaN value.

37. The apparatus of claim 34, wherein the computing mechanism is configured to set the minimum to negative infinity if the first floating-point number is a default NaN value and the fourth floating-point number is the default NaN value.

38. The apparatus of claim 34, wherein the computing mechanism is configured to set the minimum to negative infinity if the second floating-point number is a default NaN value and the third floating-point number is the default NaN value.

39. The apparatus of claim 33, wherein if none of the at least four floating-point numbers is a default NaN value or a value representing the empty interval, the computing mechanism is configured to select the minimum of the at least four floating-point numbers.

40. The apparatus of claim 34, wherein the operation can include one of a multiplication operation and a division operation.

41. An apparatus that performs a maximum computation for an interval operation, comprising:

an input that is configured to receive at least four floating-point numbers, including a first floating-point number, a second floating-point number, a third floating-point number and a fourth floating-point number; and

a computing mechanism that is configured to compute a maximum of the at least four floating-point numbers;

wherein if the at least four floating-point numbers include one or two default NaN (not-a-number) values and the remaining values are not default NaN values, the default NaN values are ignored in computing the maximum.

42. The apparatus of claim 41,

wherein the maximum is a right endpoint of a resulting interval of the interval operation;

wherein the first floating-point number is the result of an operation between the left endpoint of a first interval and the left endpoint of a second interval;

wherein the second floating-point number is the result of the operation between the left endpoint of the first interval and the right endpoint of the second interval;

wherein the third floating-point number is the result of the operation between the right endpoint of the first interval and the left endpoint of the second interval; and

wherein the fourth floating-point number is the result of the operation between the right endpoint of the first interval and the right endpoint of the second interval.

43. The apparatus of claim 41, wherein the computing mechanism is configured to set the maximum to a value representing the empty interval, if any of the at least four floating-point numbers contain the value representing the empty interval.

44. The apparatus of claim 43, wherein the value representing the empty interval is a non-default NaN value.

45. The apparatus of claim 42, wherein the computing mechanism is configured to set the maximum to positive infinity if the first floating-point number is a default NaN value and the fourth floating-point number is the default NaN value.

46. The apparatus of claim 42, wherein the computing mechanism is configured to set the maximum to positive infinity if the second floating-point number is a default NaN value and the third floating-point number is the default NaN value.

47. The apparatus of claim 41, wherein if none of the at least four floating-point numbers is a default NaN value or a value representing the empty interval, the computing mechanism is configured to select the maximum of the at least four floating-point numbers.

48. The apparatus of claim 42, wherein the operation can include one of a multiplication operation and a division operation.